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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/874,310	06/06/2001	Kenichiro Chiba	NEG-221 US	7563

466 7590 12/21/2005

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EXAMINER	
ETTEHADIEH, ASLAN	
ART UNIT	**PAPER NUMBER**
2637	

DATE MAILED: 12/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/874,310	CHIBA, KENICHIRO	
	Examiner	Art Unit	
	Aslan Ettehadieh	2637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 November 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14,16,18,19,22,24,28 and 29* is/are rejected.

7)☒ Claim(s) *15,17,20-21,23 and 25-27* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06 June 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *11/1/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's amended title and specification, filed on November 01, 2005, has been fully considered and are persuasive. The objection to the specification has been withdrawn.

2. Applicant's arguments to claim 24, filed on November 01, 2005, is persuasive. The objection to claim 24 has been withdrawn.

3. Applicant's amended claim 25, filed on November 01, 2005, has been fully considered and are persuasive. The objection to the claim 25 has been withdrawn.

4. Applicant's arguments to claims 26 and 27, filed November 01, 2005, have been fully considered but they are not persuasive. The use of reference characters is to be considered having no effect on the scope of the claim (MPEP 608.01(m)).

5. Applicant's amended claim 7, filed on November 01, 2005, has been fully considered and is persuasive. The rejection to the claim 7 has been withdrawn.

6. Applicant's arguments with respect to claims 1 – 25, and 28 – 29 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1, 5, 7, 10, 11, 12, 14, 28,and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al. (US 6266365) in view of Klang et al. (US 6330271).

2. Regarding claim 1, Wang discloses a RAKE reception apparatus (col 4 lines 6 – 7) having a delay lock loop circuit, termed "DLL circuit" (col 4 lines 10 – 12), herein, for performing control to keep synchronization for a plurality of finger circuits adapted for separately despreading and demodulating reception signals passed through respective paths of the multiple paths (col 4 lines 20 – 28), said apparatus comprising: synchronous tracking in said DLL circuit (col 4 lines 40 – 47) based on the information at the time of output synthesis in a RAKE combiner adapted for combining outputs of said plural circuits with output demodulated signals (col 4 lines 47 – 49); and means for aligning the phase of said DLL circuit with the phase of the selected one finger circuit (col 4 lines 49 – 51, col 5 lines 50 – 54, and col 6 lines 19 – 39). However, Wang does not disclose a means for selecting one of the finger circuits.

In the same field of endeavor, however, Klang discloses a means for selecting one of the finger circuits (col 4 lines 4 – 5).

Therefore it would have been obvious to one skilled in the art at the time of invention was made to use a means for selecting one of the finger circuits as taught by Klang in the system of Wang's RAKE reception apparatus in order to provide for much higher traffic density thus providing better efficiency.

3. Regarding claim 5, Wang discloses all limitations of claim 5 as analyzed in claim 1 above. Wang further discloses a RAKE reception apparatus wherein said DLL circuit

includes means for detecting the correlation between reference signals leading and lagging an optimal phase each by a preset timing, and a reception signal (col. 4 lines 25 – 28), and means for varying the oscillation frequency of clocks based on the difference information of outputs of the correlation values (col 4 lines 48 – 51); said clocks (figure 2 element 24) being supplied to said plural finger circuits (figure 2 element 9), and said DLL circuit being not provided with PN sequence generators (Figure 2 elements 9, 22 and 24, where element 9 is being provided to element 22 and not element 24); said DLL circuit being fed with a reference signal leading and lagging a preset timing with respect to an optimal phase (col 6 lines 29 – 32, where early is interpreted as leading and late being interpreted as lagging), said reference signal being output by the PN sequence generator of the selected one of the finger circuits (figure 2 elements 22 and 24), said DLL circuit using these reference signals for detecting the correlation with respect to the reception signal to align the code phase of said DLL circuit with the code phase of the selected one of the finger circuits (col 6 lines 19 – col 7 line 7).

4. Regarding claim 7, Wang discloses a RAKE reception apparatus (col 4 lines 6 – 7) including: a plurality of finger circuits (col 5 line 62) for despreading and demodulating respective reception signals (col 4 lines 64 – 65) retrieved by a searcher adapted for retrieving respective paths from multipath reception signals (col 4 lines 3 – 17), and a RAKE combiner for combining demodulated outputs from said plural finger circuits (col 4 lines 3 – 9), a sole delay lock loop circuit termed "DLL circuit", for synchronization holding controlling in its inside, a said sole DLL circuit being in common for said plural finger circuits (figure 2 element 22); a circuit that said plural finger circuits to be

synchronization tracked by said DLL circuit among the plural finger circuits (col 1 lines 32 – 43); and a control circuit for receiving the finger-circuit-based information (col 4 lines 10 – 15) used by said RAKE combiner in combining outputs of said finger circuits (col 6 lines 6 – 9), said one of the finger circuits to be tracked by said DLL circuit, based on said information (col 1 lines 38 – 41). However, Wang does not disclose a changeover circuit for switching to one said plural finger among the plural finger circuits and selecting said one of the finger circuits for commanding the switching to said changeover circuit.

In the same field of endeavor, however, Klang discloses a means for a changeover circuit for switching to one said plural finger among the plural finger circuits and selecting said one of the finger circuits for commanding the switching to said changeover circuit (figure 2 element 52, col 4 lines 34 – 59; where scheduling is being interpreted as switching).

Therefore it would have been obvious to one skilled in the art at the time of invention was made to use a means for a changeover circuit for switching to one said plural finger among the plural finger circuits and selecting said one of the finger circuits for commanding the switching to said changeover circuit as taught by Klang in the system of Wang's RAKE reception apparatus to establish synchronization in a shorter period of time in order to provide more efficiency in the processing time.

5. Regarding claim 10, Wang discloses all limitations of claim 10 as analyzed in claim 1 above. Wang further discloses a RAKE reception apparatus wherein clocks output from said DLL circuit (col 1 lines 48 – 51) are routed not only to the one of the

plural finger circuits selected by said changeover circuit but also to the remaining finger circuits (col 1 lines 51 – 56).

6. Regarding claim 11, Wang discloses all limitations of claim 11 as analyzed in claim 10 above. Wang further discloses a RAKE reception apparatus wherein said clocks output from said DLL circuit are routed to the PN sequence generator (figure 2 element 24) of each finger circuit to perform synchronization holding operation (col 1 lines 32 – 54).

7. Regarding claim 12, Wang discloses all limitations of claim 12 as analyzed in claim 7 above. Wang further discloses a RAKE reception apparatus wherein said DLL circuit receives an output signal and based on the received signal aligns the phase (col 1 lines 34 – 43). Klang further discloses of the one finger circuit selected by said changeover circuit and, based on the received signal, aligns the phase of the pseudorandom noise, termed "PN", code used for despreading the received data with the phase of the PN sequence generator in said one finger circuit selected by said changeover circuit (col 2 lines 19 – 44, col 4 lines 4 - 59).

8. Regarding claim 14, Wang in discloses all limitations of claim 14 as analyzed in claim 7 above. Wang further discloses a RAKE reception apparatus wherein the phase of the PN sequence generator in said DLL circuit is aligned to the phase of the PN sequence generator in the one finger circuit (col 4 lines 49 – 51, col 5 lines 50 – 54, and col 6 lines 19 – 39). Klang discloses that one finger circuit selected by said changeover circuit (col 4 lines 34 – 59).

9. Regarding claim 28, Wang discloses all limitations of claim 28 as analyzed in claim 1 above. Wang further discloses a RAKE reception apparatus wherein one or a plurality of said DLL circuits are provided each one of which is provided in each group of a plurality of finger circuits (figure 2 elements 9 and 22).

10. Regarding claim 29, Wang discloses all limitations of claim 29 as analyzed in claim 7 above. Wang further discloses a RAKE reception apparatus wherein one or a plurality of said DLL circuits are provided each one of which is provided in each group of a plurality of finger circuits (figure 2 elements 9 and 22).

11. Claims 3, 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al. (US 6266365) in view of Klang et al. (US 6330271) in further view of Kaku et al. (US 5548613).

12. Regarding claim 3, Wang discloses all limitations of claim 3 as analyzed in claim 1 above. Wang further discloses a RAKE reception apparatus wherein said DLL circuit includes means for detecting the correlation between a reference signal leading and lagging an optimal phase each by a preset timing, and a reception signal, (col 4 lines 25 – 28 and col 6 lines 19 – 29)) and for varying the oscillation frequency of clocks (figure 1 element 800) based on the difference information of outputs of the correlation values, (col 4 lines 48 – 51) said clocks (figure 1 element 800) being supplied to a pseudorandom noise PN sequence generator (figure 2 element 24) in said DLL circuit adapted for generating said leading and lagging reference signals and to said plural finger circuits; (col 6 lines 19 –27) and wherein the selected one of the finger circuits in said DLL circuit to align a code phase of said DLL circuit with a code phase of the

selected one finger circuit (col 4 lines 46 – 51). However, Wang does not disclose a shift register value of the PN sequence generator is loaded in a shift register of the PN sequence generator.

In the same field of endeavor, however, Kaku discloses a shift register value of the PN sequence generator is loaded in a shift register of the PN sequence generator (col. 26 line 63 – col. 27 line 14).

Therefore it would have been obvious to one skilled in the art at the time of invention was made to have a shift register value of the PN sequence generator is loaded in a shift register of the PN sequence generator as taught by Kaku in the system of Wang's RAKE reception apparatus to ensure a quick search of the rake finger in order to provide more accuracy.

13. Regarding claim 4, Wang discloses all limitations of claim 4 as analyzed in claim 2 above. Wang further discloses a RAKE reception apparatus wherein said DLL circuit includes means for detecting the correlation between a reference signal leading and lagging an optimal phase each by a preset timing, and a reception signal, (col 4lines 25 – 28) and for varying the oscillation frequency of clocks (figure 1 element 800) based on the difference information of outputs of the correlation values, (col 4 lines 48 – 51) said clocks (figure 1 element 800) being supplied to a PN sequence generator (col. 1 line 11) in said DLL circuit adapted for generating said leading and lagging reference signals and to said plural finger circuits; (col 6 lines 19 –27) and wherein the selected one of the finger circuits in said DLL circuit to align a code phase of said DLL circuit with a code phase of the selected one finger circuit (col 4 lines 46 – 51). However, Wang does not

disclose a pseudorandom noise PN sequence generator and a shift register value of the PN sequence generator is loaded in a shift register of the PN sequence generator.

In the same field of endeavor, however, Kaku discloses a shift register value of the PN sequence generator is loaded in a shift register of the PN sequence generator (col. 26 line 63 – col. 27 line 14).

Therefore it would have been obvious to one skilled in the art at the time of invention was made to have a pseudorandom noise PN sequence generator and a shift register value of the PN sequence generator is loaded in a shift register of the PN sequence generator as taught by Kaku in the system of Wang's RAKE reception apparatus to ensure a quick search of the rake finger in order to ensure a quick search of the rake finger in order to provide more accuracy.

14. Claims 2, 6, 8, 9, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al. (US 6266365) in view of Klang (US 6330271) and in further view of Schmidl (US 6816541).

15. Regarding claim 2, Wang in discloses all limitations of claim 2 as analyzed in claim 1 above. However, Wang does not disclose at the time of maximum ratio combining in said RAKE combiner, the finger circuit on which the maximum weighting is placed is selected based on the weighting information afforded to an output of said finger circuit.

In the same field of endeavor, however, Schmidl discloses at the time of maximum ratio combining in said RAKE combiner, the finger circuit on which the

maximum weighting is placed is selected based on the weighting information afforded to an output of said finger circuit (col 1 lines 56 – 64).

Therefore it would have been obvious to one skilled in the art at the time of invention was made that at the time of maximum ratio combining in said RAKE combiner, the finger circuit on which the maximum weighting is placed is selected based on the weighting information afforded to an output of said finger circuit as taught by Schmidl in the system of Wang RAKE reception apparatus to improve signal to noise ratio to provide a cleaner signal.

16. Regarding claim 6, Wang discloses all limitations of claim 6 as analyzed in claim 2 above. Wang further discloses a RAKE reception apparatus wherein said DLL circuit includes means for detecting the correlation between reference signals leading and lagging an optimal phase each by a preset timing, and a reception signal (col 4 lines 25 – 28), and means for varying the oscillation frequency of clocks based on the difference information of outputs of the correlation values (col 4 lines 48 – 51); said clocks (figure 2 element 24) being supplied to said plural finger circuits (figure 2 element 9), and said DLL circuit being not provided with PN sequence generators (Figure 2 elements 9, 22 and 24, where element 9 is being provided to element 22 and not element 24); said DLL circuit being fed with a reference signal leading and lagging a preset timing with respect to an optimal phase (col 6 lines 29 – 32, where early is interpreted as leading and late being interpreted as lagging), said reference signal being output by the PN sequence generator of the selected one of the finger circuits (figure 2 elements 22 and 24), said DLL circuit using these reference signals for detecting the correlation with respect to the

reception signal to align the code phase of said DLL circuit with the code phase of the selected one of the finger circuits (col 6 lines 19 – col 7 line 7).

17. Regarding claim 8, Wang discloses all limitations of claim 8 as analyzed in claim 7 above. Wang further discloses a RAKE reception apparatus wherein the DLL circuit to track the optimal finger circuit (col 1 lines 34 – 43 and 48 – 56). Klang further discloses a RAKE reception apparatus (figure 2) wherein said control circuit selects the finger circuit, for which said control circuit commanding said changeover circuit to effect the switching based on the information output by said RAKE combiner (col 2 lines 19 – 44, col 4 lines 4 - 59). However Wang does not disclose the maximum weighting is put, based on the finger-circuit-based weighting information.

In the same field of endeavor, however, Schmidl discloses the maximum weighting is put, based on the finger-circuit-based weighting information (col 1 lines 56 – 64).

Therefore it would have been obvious to one skilled in the art at the time of invention was made that the maximum weighting is put, based on the finger-circuit-based weighting information as taught by Schmidl in the system of Wang RAKE reception apparatus to improve signal to noise ratio to provide a cleaner signal.

18. Regarding claim 9, Wang discloses all limitations of claim 9 as analyzed in claim 8 above. Schmidl further discloses a RAKE reception apparatus wherein said RAKE combiner combines the demodulated signals output by each finger circuit by a maximal ratio combining method. (col 1 lines 56 – 64).

19. Regarding claim 13, Wang discloses all limitations of claim 13 as analyzed in claim 7 above. Wang further discloses a RAKE reception apparatus wherein said DLL circuit receives an output signal and, based on the received signal, aligns the phase (col 1 lines 34 – 43), wherein the DLL circuit to track the optimal finger circuit (col 1 lines 34 – 43 and 48 – 56), wherein clocks output from said DLL circuit (col 1 lines 48 – 51) are routed not only to the one of the plural finger circuits selected by said changeover circuit but also to the remaining finger circuits (col 1 lines 51 – 56); a RAKE reception apparatus wherein said clocks output from said DLL circuit are routed to each finger circuit to perform synchronization holding operation (col 1 lines 32 – 54).

Klang further disclose of the one finger circuit selected by said changeover circuit and, based on the received signal, aligns the phase of the pseudorandom noise, termed "PN", code used for despreading the received data with the phase of the PN sequence generator in said one finger circuit selected by said changeover circuit; wherein said control circuit selects the finger circuit, for which said control circuit commanding said changeover circuit to effect the switching based on the information output by said RAKE combiner; also, the output from said DLL circuit are routed to the PN sequence generator (figure 2, col 2 lines 19 – 44, col 4 lines 4 - 59).

However Wang does not disclose the maximum weighting is put, based on the finger-circuit-based weighting information and wherein said RAKE combiner combines the demodulated signals output by each finger circuit by a maximal ratio combining method.

In the same field of endeavor, however, Schmidl discloses the maximum weighting is put, based on the finger-circuit-based weighting information (col 1 lines 56 – 64) and a RAKE reception apparatus wherein said RAKE combiner combines the demodulated signals output by each finger circuit by a maximal ratio combining method. (col 1 lines 56 – 64).

Therefore it would have been obvious to one skilled in the art at the time of invention was made that the maximum weighting is put, based on the finger-circuit-based weighting information and a RAKE reception apparatus wherein said RAKE combiner combines the demodulated signals output by each finger circuit by a maximal ratio combining method. (col 1 lines 56 – 64) as taught by Schmidl in the system of Wang RAKE reception apparatus to improve signal to noise ratio to provide a cleaner signal.

20. Claims 16, 18, 19, 22, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al. (US 6266365) in view of Klang (US 6330271) and in further view of Naruse (US 6075809).

21. Regarding claim 16, Wang discloses all limitations of claim 16 as analyzed in claim 7 above. Klang discloses a RAKE reception apparatus (figure 2) wherein the PN code string output by the PN sequence generator of the selected one of the plural finger circuits is routed through said changeover circuit to said DLL circuit (cfigure2, col 2 lines 19 – 44, col 4 lines 4 - 59). However, Wang does not disclose wherein said DLL circuit despreads the reception data using the PN code string output from the PN sequence

generator of the selected one finger circuit for phase alignment with respect to the PN sequence generator in the selected one finger circuit.

In the same field of endeavor, however, Naruse discloses wherein said DLL circuit despreads the reception data using the PN code string output from the PN sequence generator of the selected one finger circuit for phase alignment with respect to the PN sequence generator in the selected one finger circuit (col 16 lines 57 – 67)

Therefore it would have been obvious to one skilled in the art at the time of invention was made that said DLL circuit despreads the reception data using the PN code string output from the PN sequence generator of the selected one finger circuit for phase alignment with respect to the PN sequence generator in the selected one finger circuit as taught by Naruse in the system of Wang RAKE reception apparatus to alleviate the fading due to the multi-paths and to improve signal to noise ratio to provide a cleaner signal

22. Regarding claim 18, Wang discloses all limitations of claim 18 as analyzed in claim 7 above. Klang further discloses a The RAKE reception apparatus wherein a value of the shift register constituting the PN sequence generator of the selected finger circuit is supplied through said changeover circuit (col 2 lines 19 – 44, col 4 lines 4 - 59). However Wang does not disclose said finger circuit includes a PN sequence generator having the initial phase set from said searcher and generating the PN code; a multiplier for multiplying input reception data with the PN sequence from said PN sequence generator; and a low-pass filter for smoothing an output of said multiplier to output a demodulated signal.

In the same field of endeavor, however, Naruse discloses said finger circuit (figure 1) includes a PN sequence generator (figure 2 element 54) having the initial phase set from said searcher and generating the PN code (col 16 lines 10 – 13); a multiplier (figure 2 element 53) for multiplying input reception data (figure 2 element 52) with the PN sequence from said PN sequence generator (figure 2 element 54); and a low-pass filter (figure 2 element 56) for smoothing an output of said multiplier to output a demodulated signal (where the band pass filter is interpreted as a low pass filter because it is inherent that a band pass filter comprises of a low pass filter).

Therefore it would have been obvious to one skilled in the art at the time of invention was made that said finger circuit includes a PN sequence generator having the initial phase set from said searcher and generating the PN code; a multiplier for multiplying input reception data with the PN sequence from said PN sequence generator; and a low-pass filter for smoothing an output of said multiplier to output a demodulated signal as taught by Naruse in the system of Wang RAKE reception apparatus to alleviate the fading due to the multi-paths and to improve signal to noise ratio to provide a cleaner signal.

23. Regarding claim 19, Wang discloses all limitations of claim 19 as analyzed in claim 12 above. Klang further discloses a The RAKE reception apparatus wherein a value of the shift register constituting the PN sequence generator of the selected finger circuit is supplied through said changeover circuit (figure 2, col 2 lines 19 – 44, col 4 lines 4 - 59). However Wang does not disclose said finger circuit includes a PN sequence generator having the initial phase set from said searcher and generating the

PN code; a multiplier for multiplying input reception data with the PN sequence from said PN sequence generator; and a low-pass filter for smoothing an output of said multiplier to output a demodulated signal.

In the same field of endeavor, however, Naruse discloses said finger circuit (figure 1) includes a PN sequence generator (figure 2 element 54) having the initial phase set from said searcher and generating the PN code (col 16 lines 10 – 13); a multiplier (figure 2 element 53) for multiplying input reception data (figure 2 element 52) with the PN sequence from said PN sequence generator (figure 2 element 54); and a low-pass filter (figure 2 element 56) for smoothing an output of said multiplier to output a demodulated signal (where the band pass filter is interpreted as a low pass filter because it is inherent that a band pass filter comprises of a low pass filter).

Therefore it would have been obvious to one skilled in the art at the time of invention was made that said finger circuit includes a PN sequence generator having the initial phase set from said searcher and generating the PN code; a multiplier for multiplying input reception data with the PN sequence from said PN sequence generator; and a low-pass filter for smoothing an output of said multiplier to output a demodulated signal as taught by Naruse in the system of Wang RAKE reception apparatus to alleviate the fading due to the multi-paths and to improve signal to noise ratio to provide a cleaner signal.

24. Regarding claim 22, Wang discloses all limitations of claim 22 as analyzed in claim 7 above. Wang further discloses a RAKE reception apparatus wherein said PN sequence generator (figure 2 element 24) is configured for generating an early PN code

preceding the PN code in timing (figure 4B output of element 60) and a late PN code later in timing than the PN code (figure 4B output of element 62) used in said finger circuit, and for outputting the early and late PN codes to said changeover circuit (col 1 lines 48 – 54 and col 4 lines 46 – 60). However, Wang does not disclose wherein said finger circuit includes a PN sequence generator having the initial phase set from said searcher and generating the PN code; a multiplier for multiplying input reception data with the PN sequence from said PN sequence generator; and a low-pass filter for smoothing an output of said multiplier to output a demodulated signal.

In the same field of endeavor, however, Naruse discloses said finger circuit (figure 1) includes a PN sequence generator (figure 2 element 54) having the initial phase set from said searcher and generating the PN code (col 16 lines 10 – 13); a multiplier (figure 2 element 53) for multiplying input reception data (figure 2 element 52) with the PN sequence from said PN sequence generator (figure 2 element 54); and a low-pass filter (figure 2 element 56) for smoothing an output of said multiplier to output a demodulated signal (where the band pass filter is interpreted as a low pass filter because it is inherent that a band pass filter comprises of a low pass filter).

Therefore it would have been obvious to one skilled in the art at the time of invention was made that said finger circuit includes a PN sequence generator having the initial phase set from said searcher and generating the PN code; a multiplier for multiplying input reception data with the PN sequence from said PN sequence generator; and a low-pass filter for smoothing an output of said multiplier to output a demodulated signal as taught by Naruse in the system of Wang RAKE reception

apparatus to alleviate the fading due to the multi-paths and to improve signal to noise ratio to provide a cleaner signal.

25. Regarding claim 24, Wang discloses all limitations of claim 24 as analyzed in claim 7 above. Wang further discloses a RAKE reception apparatus wherein PN codes having an in-phase component PNI (figure 3 element PNI) and a quadrature component PNQ (figure 3 element PNQ); a complex multiplier (Figure 3 elements 152, 154, 156, and 158) for multiplying received input in-phase (I)/quadrature (Q) data (figure 3 elements RI and RQ) with the PN sequence (PNI, PNQ) (figure 3 elements PNI and PNQ) from said PN sequence generator (Figure 2 element 24). However, Wang does not disclose said finger circuit includes a PN sequence generator having the initial phase set from said searcher and generating PN codes; and a low-pass filter for smoothing an output of said complex multiplier for outputting a demodulated signal.

In the same field of endeavor, however, Naruse discloses said finger circuit includes a PN sequence generator having the initial phase set from said searcher and generating PN codes (col 16 lines 10 – 13); and a low-pass filter (figure 2 element 56) for smoothing an output of said multiplier to output a demodulated signal (where the band pass filter is interpreted as a low pass filter because it is inherent that a band pass filter comprises of a low pass filter).

Therefore it would have been obvious to one skilled in the art at the time of invention was made that said finger circuit includes a PN sequence generator having the initial phase set from said searcher and generating PN codes; and a low-pass filter for smoothing an output of said complex multiplier for outputting a demodulated signal

as taught by Naruse in the system of Wang RAKE reception apparatus to alleviate the fading due to the multi-paths and to improve signal to noise ratio to provide a cleaner signal.

Allowable Subject Matter

26. Claims 15, 17, 20, 21, 23, 25, 26 and 27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Contact information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aslan Ettehadieh whose telephone number is (571) 272-8729. The examiner can normally be reached on Monday - Friday, 8:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on (571) 272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Aslan Ettehadieh

Examiner
Art Unit 2637

AE

JAY K. PATEL
SUPERVISORY PATENT EXAMINER